AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for computerized modeling of at least one chamber of a building structure ~~and for enabling~~ with a concurrent estimation of ~~various projects to be completed~~ one or more design parameters associated with said chamber of ~~within~~ said building structure, said method comprising the steps of:

(a) selecting, from an estimation program, a non-derivational default volumetric polyhedron as an estimation polyhedron, said estimation polyhedron comprising a plurality of facets forming an enclosed volume, wherein each of said facets is defined as a series of vertices;

(b) assigning material and labor calculation attributes to one or more of said plurality of facets, wherein ~~each of said facets at least one pre-defined estimation~~ said material and labor calculation attributes ~~that~~ corresponds to ~~a~~ structural attributes of said chamber;

(c) graphically displaying said estimation polyhedron and concurrently displaying finishing parameters relating to said estimation polyhedron, wherein said finishing parameters provide estimates of finishing material and labor needed for a selected facet of said one or more of said plurality of facets, wherein said finishing material is in established industry units, and wherein said finishing parameters correspond to said material and labor calculation attributes;

(~~c~~d) morphing ~~a~~ said selected facet of said one or more of said plurality of facets to obtain a morphed facet, such that said estimation polyhedron more closely approximates said chamber undergoing estimation;

(~~d~~e) automatically revising in real time said material and labor calculation ~~at least one estimation~~ attribute of said morphed facet and any adjacent facets of said estimation polyhedron also modified and affected by said step of morphing, in order to maintain a closed volume of said estimation polyhedron;

(f) automatically updating said finishing parameter display relating to said morphed facet as part of providing a real time project estimate of material and labor, said project estimate is based upon and associated with said material and labor calculation attributes of said estimation polyhedron and corresponds to a project to be completed in said building structure; and

(e~~g~~) repeating said steps of morphing, ~~and said step of~~ revising and automatically updating until said estimation polyhedron accurately depicts said chamber undergoing estimation~~; and~~.

~~(f) generating a project estimate by selecting at least one facet of said estimation polyhedron and entering an estimation request into a query in said estimation program, said project estimate is based upon and associated with said estimation attributes of said estimation polyhedron and corresponds to a project to be completed in said building structure.~~

2. (original) The method as recited in claim 1, wherein:

(a) said morphing step further comprises the step of when additional facets better approximate said chamber undergoing approximation, partitioning said selected facet of said estimation polyhedron into at least a first and second morphed facets to provide an improved estimation of said chamber undergoing estimation; and

(b) said revising step further comprises the step of from said at least first and second morphed facets of said selected facet, including additional estimation attributes corresponding to said first and second morphed facets.

3. (original) The method as recited in claim 1, further comprising the step of:

(a) defining said chamber as a room within a building; and

(b) defining said chamber attributes to include a surface area correlating to said plurality of facets of said estimation polyhedron.

4. (original) The method as recited in claim 3, wherein said defining said chamber attribute step further comprises the steps of:

(a) assigning one of said plurality of facets of said estimation polyhedron a floor attribute of said room;

(b) assigning each of others of said plurality of facets of said estimation polyhedron adjacent to said facet having said floor attribute a wall attribute; and

(c) assigning one of said plurality of facets of said estimation polyhedron adjacent to said ones of said plurality of facets having said wall attribute a ceiling attribute.

5. (original) The method as recited in claim 1, wherein said selecting a default polyhedron further comprises the step of:

(a) defining said default polyhedron to include:

i. at least 4 facets each defined by a plurality of vertices shared by others of said at least 4 facets;

ii. a surface area for each of said at least 4 facets; and

iii. a volume of said default polyhedron as bounded by each of said at least 4 facets.

6. (currently amended) A method for graphically modeling dimensions of a room of a building structure while concurrently providing a real time estimate of ~~estimating~~ attributes of saida room ~~of a building structure~~, said method comprising the steps of:

(a) selecting a default volumetric polyhedron as an estimation polyhedron to approximate said attributes of said room, said estimation polyhedron comprising a plurality of facets, wherein each of said facets is defined as a series of vertices;

(b) assigning material and labor attributes to one or more of ~~each of~~ said plurality of facets, wherein ~~at least one pre-defined estimation~~ said material and labor attributes ~~that~~ corresponds to ~~a~~ structural attributes of said room;

(c) graphically displaying said estimation polyhedron and concurrently displaying finishing parameters relating to said estimation polyhedron, wherein said finishing parameters provide estimates of finishing material and labor needed for a selected facet of said one or more of said plurality of facets, wherein said finishing material is in established industry units for purchase, and wherein said finishing parameters correspond to said material and labor attributes;

(d) morphing ~~at~~ said selected facet ~~least one~~ of said one or more of said plurality of facets of said estimation polyhedron to obtain a morphed facet and to more closely approximate said room undergoing estimation;

(~~d~~e) automatically revising in real time said material and labor ~~at least one estimation~~ attribute of said morphed facet and any adjacent facets of said estimation polyhedron also modified and affected by said step of morphing, in order to maintain a closed volume of said estimation polyhedron;

(~~e~~f) automatically updating said finishing parameter display relating to said morphed facet as part of providing a real time project estimate of material and labor, said project estimate is based upon and associated with said material and labor attributes of said estimation polyhedron and corresponds to a project to be completed in said building structure; and

(g) repeating said steps of morphing, ~~and~~ automatically revising, and automatically updating ~~steps~~ until said estimation polyhedron accurately depicts said room undergoing estimation~~;~~

~~(f) listing said estimation attributes of said estimation polyhedron as said attributes of said room; and~~

~~(g) generating a project estimate by selecting an estimation attribute from said list and entering an estimate request into a query in said estimation program, said project estimate is based upon and associated with said selected estimation attribute and corresponds to a project to be completed in said building structure~~.

7. (original) The method as recited in claim 6, wherein said selecting step further comprises the steps of:

(a) assigning one of said plurality of facets of said estimation polyhedron a floor attribute of said room;

(b) assigning each of others of said plurality of facets of said estimation polyhedron adjacent to said facet having said floor attribute a wall attribute; and

(c) assigning one of said plurality of facets of said estimation polyhedron adjacent to said ones of said plurality of facets having said wall attribute a ceiling attribute.

8. (original) The method as recited in claim 6, wherein:

(a) said morphing step further comprises the step of when additional facets better approximate said chamber undergoing approximation, partitioning said selected facet of said estimation polyhedron into at least a first and second morphed facets to provide an improved estimation of said chamber undergoing estimation; and

(b) said revising step further comprises the step of from said at least first and second morphed facets of said selected facet, including additional estimation attributes corresponding to said first and second morphed facets.

9. (original) The method as recited in claim 6, further comprising the steps of hierarchically grouping additional rooms into levels and grouping a plurality of levels into a structure.

10. (currently amended) A graphical method for graphically representing a room within a structure and concurrently estimating material requirements for thea room ~~within a structure~~, wherein said room is comprised of a plurality of planes, comprising:

(a) displaying a default surface polygon, said surface polygon forming one plane of a plurality of planes of a volumetric estimation polyhedron for approximating said room, said plurality of planes each further having an estimation attribute assigned thereto that corresponds to a structural attribute of said room, wherein each of the planes is defined as a series of vertices;

(b) assigning material and labor attributes to one or more of said plurality of planes, wherein said material and labor attributes correspond to structural attributes of said room;

(c) graphically displaying said estimation polyhedron and concurrently displaying finishing parameters relating to said estimation polyhedron, wherein said finishing parameters provide estimates of finishing material and labor needed for a selected plane of said one or more of said plurality of planes, wherein said finishing material is in established industry units for purchase, and wherein said finishing parameters correspond to said material and labor attributes;

(~~b~~d) morphing said selected plane ~~default surface polygon~~ into a morphed polygon to approximate a plane of said room undergoing estimation;

(~~c~~e) automatically revising in real time said material and labor calculation ~~estimation~~ attribute of said morphed polygon and adjacent ones of said plurality of planes affected by said morphing step in order to maintain a closed volume of said estimation polyhedron;

(f) automatically updating said finishing parameter display relating to said morphed plane as part of providing a real time project estimate of material and labor, said project estimate is based upon and associated with said material and labor

attributes of said estimation polyhedron and corresponds to a project to be completed in said building structure; and

(~~d~~g) repeating said morphing, automatically ~~and~~ revising, and automatically updating steps until said estimation polyhedron accurately approximates said room undergoing estimation ~~(e) converting said estimation attributes of said estimation polyhedron into said material requirements for said room within said structure by selecting at least one plane of said estimation polyhedron and entering a materials request into a query in said estimation program~~.

11. (original) The method as recited in claim 10, wherein:

(a) said morphing step further comprises the step of when additional planes better approximate said room undergoing estimation, partitioning said morphed polygon of said estimation polyhedron into at least a first and second morphed polygons to provide an improved estimation of said room undergoing estimation; and

(b) said revising step further comprises the step of from said at least first and second morphed polygons of said selected facet, including additional estimation attributes corresponding to said first and second morphed polygons.

12. (original) The method as recited in claim 11, wherein said converting said estimation attributes of said estimation polyhedron step comprises the step of:

(a) converting said estimation attribute into a quantity of a specific one of said material requirements.

13. (original) The method as recited in claim 11, further comprising the steps of:

(a) redefining another one of said plurality of planes of said estimation polyhedron as said default surface polygon to display, morph and revise estimation attributes associated therewith.

14. (original) The method as recited in claim 10, wherein said displaying step further comprises the steps of:

(a) assigning one of said plurality of planes of said estimation polyhedron a floor attribute of said room;

(b) assigning each of others of said plurality of planes of said estimation polyhedron adjacent to said plane having said floor attribute a wall attribute; and

(c) assigning one of said plurality of planes of said estimation polyhedron adjacent to said ones of said plurality of planes having said wall attribute a ceiling attribute.

15. (currently amended) A computer program product for implementing within a computer system a method for graphically modeling dimensions of a room of a building structure while concurrently providing a real time estimate of attributes of said room, the computer program product comprising~~A computer readable medium having computer executable instructions for performing the steps comprising~~:

a computer readable medium for providing computer program code means utilized to implement the method, wherein the computer program code means is comprised of executable code for implementing the steps for:

(a) displaying a default surface polygon, said surface polygon forming one plane of a plurality of planes of a volumetric estimation polyhedron for approximating a room of a building structure;

(b) assigning ~~each of said planes at least one pre-defined~~material and labor ~~estimation~~ attributes to one or more of said plurality of planes, wherein said material and labor calculation ~~that corresponds to a structural~~ attributes correspond to structural attributes of said room;

(c) graphically displaying said estimation polyhedron and concurrently displaying finishing parameters relating to said estimation polyhedron, wherein said finishing parameters provide estimates of finishing material and labor needed for a selected plane of said one or more of said plurality of planes, wherein said finishing material is in established industry units for purchase, and wherein said finishing parameters correspond to said material and labor attributes;

(d) morphing said ~~default surface polygon~~selected plane into a morphed polygon, such that said morphed polyhedron more closely approximates a plane of said room undergoing estimation;

(~~d~~e) automatically revising in real time said material and labor ~~estimation~~ attribute of said morphed polygon and any adjacent planes modified and affected by said morphing step, in order to maintain a closed volume of said estimation polyhedron;

(f) automatically updating said finishing parameter display relating to said morphed polygon as part of providing a real time project estimate of material and labor, said project estimate is based upon and associated with said material and labor

attributes of said estimation polyhedron and corresponds to a project to be completed in said building structure; and

(eg) repeating said morphing, ~~and~~ automatically revising, and automatically updating steps until said estimation polyhedron accurately approximates said room of said building structure undergoing estimation~~; and~~

~~(f) generating a project estimate by selecting at least one plane of said estimation polyhedron and entering an estimation request into a query in said estimation program, said project estimate is based upon and associated with said estimation attributes of said estimation polyhedron and corresponds to a project to be completed in said building structure~~.

16. (original) The computer program product ~~computer-readable medium~~ of claim 15 having further computer-executable instructions for performing the steps of:

(a) said morphing step further comprises the step of when additional planes better approximate said room undergoing estimation, partitioning said morphed polygon of said estimation polyhedron into at least a first and second morphed polygons to provide an improved estimation of said room undergoing estimation; and

(b) said revising step further comprises the step of from said at least first and second morphed polygons of said selected facet, including additional estimation attributes corresponding to said first and second morphed polygons.

17. (original) The computer program product ~~computer-readable medium~~ of claim 15, wherein said computer-executable instructions for performing the step of converting said

estimation attributes of said estimation polyhedron step further comprises computer-executable instructions for performing the step of:

(a) converting said estimation attribute into a quantity of a specific one of said material requirements.

18. (original) The computer program product ~~computer-readable medium~~ of claim 15, having further computer-executable instructions for performing the steps of:

(a) redefining another one of said plurality of planes of said estimation polyhedron as said default surface polygon to display, morph and revise estimation attributes associated therewith.

19. (original) The computer program product ~~computer-readable medium~~ of claim 15, wherein said computer-executable instructions for performing the step of displaying a default surface polygon further comprises computer-executable instructions for performing the step of:

(a) assigning one of said plurality of planes of said estimation polyhedron a floor attribute of said room;

(b) assigning each of others of said plurality of planes of said estimation polyhedron adjacent to said plane having said floor attribute a wall attribute; and

(c) assigning one of said plurality of planes of said estimation polyhedron adjacent to said ones of said plurality of planes having said wall attribute a ceiling attribute.

20. (original) The computer program product ~~computer-readable medium~~ of claim 15, having further computer-executable instructions for performing the step of hierarchically grouping additional rooms into levels and grouping a plurality of levels into a structure.

21. (cancel)

22. (cancel)

23. (previously presented) The method of claim 1, further comprising the steps of:

(a) obtaining additional volumetric polyhedrons, each of which are utilized as estimation polyhedrons, said additional volumetric polyhedrons also comprising a plurality of facets; and

(b) combining said additional volumetric polyhedrons with said default volumetric polyhedron to obtain a plurality of volumetric polyhedrons for modeling hierarchal structures comprised of multiple chambers;

(c) assigning each of said facets in said plurality of volumetric polyhedrons at least one estimation attribute corresponding to an attribute of one of said chambers in said hierarchal structure;

(c) morphing at least one selected facet of said plurality of volumetric polyhedrons to more closely approximate said chambers of said hierarchal structure; and

(d) revising said estimation attributes of all relevant facets in response to said step of morphing.

REMARKS

In the Office Action mailed from the United States Patent and Trademark Office on February 6, 2004, the Examiner rejected claims 15-20 under 35 U.S.C. 101, rejected claims 1-23 under 35 U.S.C. 103(a) as being unpatentable over Hsu et al ("A Constraint-Based Manipulator Toolset for Editing 3D Objects", Proc. Of the 4th ACM Symposium on Solid Modeling and Applications, May 1997, pp. 168-180, hereinafter referred to as "Hsu") in view of Maxley et al (New Riders' Reference Guide to AutoCAD Release 13, 1995, pp. 21-39, 63-66, 267, 284-285, 293-295, 304-305, 307-310, 377-380, 402-404, 490-492, 560-562, and 642-644, hereinafter referred to as "Maxley"), and further in view of Gromat (United States Patent No. 5,950,374, hereinafter referred to as "Gromat"). Accordingly, Applicant respectfully provides the following:

Rejection under 35 U.S.C. § 101

The Examiner rejected claims rejected claims 15-20 under 35 U.S.C. §101 because "the disclosed invention is inoperative and therefore lacks utility." In particular, the Examiner provided:

> The preamble to Claim 15 refers to "A computer-readable medium having computer executable instructions ...". A computer-readable medium with instructions on it is not an operative invention. In order for the claim to be operative, the preamble must refer to instructions that perform a set of steps when executed, or similar.

Applicant respectfully submits that the amendments provided herein overcome the rejections made by the Examiner under 35 U.S.C. §101.

Rejection under 35 U.S.C. § 103

The Examiner rejected claims rejected claims 1-23 under 35 U.S.C. §103(a) as being unpatentable over Hsu in view of Maxley and further in view of Gromat. Applicant respectfully submits that the claim set as provided herein is not made obvious by the cited references.

The standard for a Section 103 rejection is set for in M.P.E.P 706.02(j), which provides:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Applicant respectfully submits that the references cited by the Examiner do not teach or suggest the limitations claimed in the present invention. In particular, independent claims 1, 6, 10 and 15 as provided herein include limitations relating to a method for computerized modeling of at least one chamber of a building structure with a concurrent estimation of one or more design parameters associated with said chamber of said building structure, said method comprising the steps of: (a) selecting, from an estimation program, a non-derivational default volumetric polyhedron as an estimation polyhedron, said estimation polyhedron comprising a plurality of facets forming an enclosed volume, wherein each of said facets is defined as a series of vertices; (b) assigning material and labor calculation attributes to one or more of said plurality of facets, wherein said material and labor calculation attributes correspond to structural attributes of said chamber; (c) graphically displaying said estimation polyhedron and concurrently displaying finishing parameters relating to said estimation polyhedron, wherein said finishing parameters provide estimates of finishing material and labor needed for a selected facet

of said one or more of said plurality of facets, wherein said finishing material is in established industry units, and wherein said finishing parameters correspond to said material and labor calculation attributes; (d) morphing said selected facet of said one or more of said plurality of facets to obtain a morphed facet, such that said estimation polyhedron more closely approximates said chamber undergoing estimation; (e) automatically revising in real time said material and labor calculation attribute of said morphed facet and any adjacent facets of said estimation polyhedron also modified and affected by said step of morphing, in order to maintain a closed volume of said estimation polyhedron; (f) automatically updating said finishing parameter display relating to said morphed facet as part of providing a real time project estimate of material and labor, said project estimate is based upon and associated with said material and labor calculation attributes of said estimation polyhedron and corresponds to a project to be completed in said building structure; and (g) repeating said steps of morphing, revising and automatically updating until said estimation polyhedron accurately depicts said chamber undergoing estimation.

These limitations are supported by the disclosure as originally filed. For example, reference is made to page 15, line 10 through page 22, line 21 of the original disclosure provides. And, none of the references cited by the Examiner, alone or in combination, teaches or suggests such limitations.

Accordingly, Applicant respectfully submits that for at least the reasons provided herein, the references cited by the Examiner, alone or in combination, do not teach or suggest all the claim limitations. And, since the references cited by the Examiner do not teach or suggest each and every limitation of the independent claims, Applicant respectfully submits that the prior art references do not make obvious independent claims 1, 6, 10 and 15 as provided herein. And

since the prior art references do not make obvious independent claims 1, 6, 10 and 15, Applicant respectfully submits that the prior art references cited by the Examiner do not make obvious the corresponding dependent claims, which depend from independent claims 1, 6, 10 and 15.

Thus, Applicant respectfully submits that for at least the reasons provided herein, the claim set as provided herein overcomes all rejections made by the Examiner in the Office Action.